

**WHAT IS CLAIMED IS:**

1. A wafer guide comprising:

a support panel; and

5 at least three vertical panels attached on one surface of the support panel, wherein each of the vertical panels has a vertical body panel and a plurality of protrusions extended from a top surface of the vertical body panel to define a plurality of slots, each of the plurality of slots having a sidewall that exhibits a convex shape when viewed from a top view and a bottom  
10 surface that exhibits a convex shape when viewed from a cross sectional view that crosses the body panel.

2. The wafer guide of claim 1, wherein the vertical panels  
comprise a first vertical panel and a second vertical panel attached on both  
15 edges of the support panel respectively and a central panel located between the first and second vertical panels.

3. The wafer guide of claim 2, wherein each of the bottom surfaces  
of the plurality of slots in the central panel has an asymmetrical profile with  
20 respect to a plane that is parallel with the central panel and passes through a central portion of the central panel.

4. The wafer guide of claim 2, wherein a level difference between

the slots of the first vertical panel and the second vertical panel and the slots of the central panel is at least 57 mm.

5. A wafer guide comprising:

5 a support panel; and

at least three vertical panels attached on one surface of the support panel, wherein each of the vertical panels has a vertical body panel and a plurality of protrusions extended from a top surface of the vertical body panel to define a plurality of slots, the plurality of protrusions comprising a hydrophobic material and the vertical body panel comprising a hydrophilic material.

6. The wafer guide of claim 5, wherein the hydrophobic material is fluorine system polymer, and the hydrophilic material is quartz.

7. The wafer guide of claim 5, wherein a bottom surface of each of the plurality of slots has a recessed groove.

8. The wafer guide of claim 5, wherein each of the plurality of slots comprises sidewalls having a convex shape when viewed from a top view.

9. A wafer guide comprising:

a support panel; and

at least three vertical panels attached on one surface of the support panel, wherein each of the vertical panels has a vertical body panel and a plurality of protrusions extended from a top surface of the vertical body panel to define a plurality of slots, the protrusions having a first set of protrusions interleaved with a second set of protrusions, the plurality of protrusions comprising vertical lower sidewalls that define lower widths of the plurality of slots and positive sloped upper sidewalls extending from the vertical lower sidewalls, the vertical lower sidewalls of the second set of protrusions being lower or higher than the vertical lower sidewalls of the first set of protrusions.

10

10. The wafer guide of claim 9, wherein the vertical lower sidewalls have a convex shape when viewed from a top view.

11. The wafer guide of claim 9, wherein each of the plurality of slots has a bottom surface that exhibits a convex shape when viewed from a cross sectional view crossing the vertical body panel and passing through the slot.

15

12. The wafer guide of claim 11, wherein the vertical panels comprise a first vertical panel and a second vertical panel attached on both edges of the support panel respectively and a central panel located between the first vertical panel and second vertical panel.

20

13. The wafer guide of claim 11, wherein each bottom surface of the plurality of slots in the central panel has an asymmetrical profile with respect to a plane that is parallel with the central panel and passes through a central portion of the central panel.

5

14. A wafer guide comprising:

a support panel; and

at least three vertical panels attached on one surface of the support panel, wherein each of the vertical panels has a vertical body panel and a plurality of protrusions extended from a top surface of the vertical body panel to define a plurality of slots, the plurality of protrusions having a first set of protrusions interleaved with a second set of protrusions, the plurality of protrusions comprising lower sidewalls that define lower widths of the plurality of slots and positive sloped upper sidewalls extended from the lower sidewalls, the lower sidewalls of the second set of protrusions having a vertical profile, and the lower sidewalls of the first set of protrusions having a positive slope that is steeper than the upper sidewalls.

10

15

15. The wafer guide of claim 14, wherein the vertical lower sidewalls have the same height as the positive sloped lower sidewalls.

20

16. The wafer guide of claim 14, wherein the vertical lower sidewalls have a convex shape when viewed from a top view.

17. The wafer guide of claim 14, wherein each of the plurality of slots has a bottom surface that exhibits a convex shape when viewed from a cross sectional view crossing the vertical body panel and passing through the slot.

18. The wafer guide of claim 17, wherein the vertical panels comprise a first vertical panel and a second vertical panel attached on both edges of the support panel respectively and a central panel located between the first vertical panel and second vertical panel.

19. The wafer guide of claim 17, wherein each bottom surface of the plurality of slots in the central panel has an asymmetrical profile with respect to a plane that is parallel with the central panel and passes through a central portion of the central panel.

20. A wafer guide comprising:  
a support panel; and  
at least three vertical panels attached on one surface of the support panel, wherein each of the vertical panels has a vertical body panel and a plurality of protrusions extended from a top surface of the vertical body panel to define a plurality of slots, the plurality of slots having a first set of slots interleaved with second set of slots, bottom surfaces of the first set of slots

having an opposite slope to bottom surfaces of the second set of slots when viewed from a cross sectional view taken along a plane that is parallel with the vertical panels.

5           21.     The wafer guide of claim 20, wherein sidewalls of the protrusions comprise vertical lower sidewalls defining lower widths of the plurality of slots and positive sloped upper sidewalls extended from the vertical lower sidewalls.

10           22.     The wafer guide of claim 21, wherein the vertical lower sidewalls have a convex shape when viewed from a top view.

            23.     The wafer guide of claim 21, wherein each of the plurality of slots comprises a bottom surface having a convex shape when viewed from a  
15 cross sectional view crossing the vertical body panel and passing through the slot.

            24.     The wafer guide of claim 23, wherein the vertical panels  
comprise a first vertical panel and a second vertical panel attached on both  
20 edges of the support panel respectively and a central panel located between the first vertical panel and second vertical panel.

            25.     The wafer guide of claim 24, wherein each bottom surface of the

plurality of slots in the central panel has an asymmetrical profile with respect to a plane that is parallel with the central panel and passes through a central portion of the central panel.

5           26.    A wafer guide comprising:

          a main wafer guide for holding a semiconductor wafer; and

          an comprising an auxiliary supporter having a width wider than the main wafer guide and a pair of parallel wafer supporters disposed at about opposite edges of the auxiliary supporter for holding the semiconductor wafer.

10           27.    The wafer guide of claim 26, wherein the auxiliary wafer guide is fixed to the main wafer guide or separated from the main wafer guide.

          28.    The wafer guide of claim 27, wherein each of the parallel wafer supporters is fixed to the auxiliary supporter by vertical bars that are extended from about opposite ends of the wafer supporter to be in contact with the auxiliary supporter.

          29.    The wafer guide of claim 27, wherein each of the parallel wafer supporters comprises a horizontal body having a first sidewall and a second sidewall that face to each other and a plurality of protrusions extended from one of the first sidewall and the second sidewall to define a plurality of lumbar regions, the plurality of lumbar regions for holding edges of the wafers.

30. The wafer guide of claim 29, wherein each of the parallel wafer supporters has a streamline shaped sectional view to allow smooth flow of fluid introduced into gap regions between the wafers.

5

31. The wafer guide of claim 27, wherein each of the parallel wafer supporters comprises two side bars, a front bar connecting front ends of the two side bars and a rear bar connecting rear ends of the two side bars, one of the side bars having a plurality of protrusions defining a plurality of lumbar regions for holding edges of the wafers.

10

32. A wafer guide comprising:

a support panel;

at least three vertical panels attached on one surface of the support panel, the vertical panels including a central panel that passes through a central portion of the support panel, each of the vertical panels having a vertical body panel and a plurality of protrusions extended from a top surface of each vertical body panel to define a plurality of slots for holding wafers; and

15

a wafer alignment tool for adjusting actual widths of the plurality of slots of at least the central panel so that the wafers are separated by a substantially uniform distance.

20



33. The wafer guide of claim 32, wherein lower sidewalls of the protrusions have a vertical profile.

34. The wafer guide of claim 32, wherein the wafer alignment tool  
5 comprises:

a cylinder providing a sealed space in the vertical body panel of the central panel;

a piston disposed in the cylinder;

a first fluid inlet conduit and a second fluid inlet conduit connected to  
10 opposite ends of the cylinder respectively, thereby supplying a pressure sufficient for reciprocation of the piston; and

a plurality of pads connected to the piston, wherein the pads protrude from respective protrusions or are retracted into respective protrusions according to a movement direction of the piston.

15 35. The wafer guide of claim 32, wherein the wafer alignment tool comprises:

a first rotational axis and a second rotational axis disposed on two sides of the central panel respectively, the first rotational axis and the second  
20 rotational axis being parallel with a straight line penetrating the protrusions of the central panel; and

a plurality of rollers surrounding the first rotational axis and the second rotational axis to simultaneously rotate with the first rotational axis and the

second rotational axis, each of the plurality of rollers comprising a first edge having a first thickness and a second edge having a second thickness greater than the first thickness.